California Secretary of State
Consultant's Report on:

Volume Test
ES&S, Inc.
InkaVote Precinct Ballot Counter
Including:
International Lottery and Totalizer Systems, Inc. InkaVote Precinct Ballot Counter version 1.10
Unisyn Voting Solution's Election Management System version 1.1

Prepared April 19, 2006
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This report is prepared as a supplement and attachment to the "Staff Review and Analysis" (SOS Report) which will be prepared by the California Secretary of State's Office of Voting Systems Technology Assessment (OVSTA).

A large part of the consulting work product was providing assistance to OVSTA in both the planning and conduct of voting system tests. The majority of the findings are reported in the SOS Report. This report will be limited to a description of the tasks performed and findings that may not be covered in the SOS Report.

Our expertise is in methodologies for examining computerized voting systems, analysis of systems operation, developing measurements of system compliance with established criteria, identification and analysis of system anomalies and collecting evidence of system characteristics and compliance.

We are not attorneys and do not offer legal advice. We have assisted the California Secretary of State in the collection of facts and evidence that he will use in reaching certification decisions. However, to advise him on the determination of whether the system complies with California's certification requirements would require an interpretation of law. Accordingly, we do not provide recommendations or any opinion as to whether the system can be certified. Recommendations to the Secretary for or against certification are within the duties of the OVSTA and are included in their report. The work that we have performed and our findings are strictly limited to the specific serial numbered hardware elements and specific software elements tested during the examination. The results described in this report should be reliable and repeatable for those specific items. The decision to apply those results to decisions about other items is solely at the discretion and risk of the Secretary of State and the purchasers of systems.

In order to prepare for the mass volume test, Unisyn Voting Solution's Election Management System, version 1.1 was loaded on to a clean server. After the installation was complete, a database previously prepared by the vendor was loaded onto the server.

Using a software loading utility provided by the vendor, the trusted build of the Precinct Ballot Counter firmware 1.10 was loaded onto five randomly selected machines. After the software was loaded, one of the five machines and two of the machines that had been previously loaded by the vendor were selected. MD5 hashes were run against the firmware on these three machines and against the firmware on the trusted build CD. MD5 results for each machine and the trusted build were printed out, audited and found to be identical.

Through the course of the day, a test deck was run through each of fifty machines. As temporary employees fed the ballots into the machines, incident reports were prepared for all anomalous conditions. At the end of the day, each of the USB transfer media was uploaded to EMS. After the upload, post election reports were run and the data was backed up. In situations where the tabulation did not match the expected results from the test deck, the records of incident reports and the test decks were examined to determine the cause of the anomaly.

There were no anomalies witnessed that could not be resolved or that would prevent the use of this system in the conduct of an election. On a number of occasions, the temporary employees inadvertently double-fed ballots into the machine. Although this could not occur in a polling place where the voter is only provided with one ballot, this would become a concern when the Precinct Ballot Counter units were used to tabulate absentee votes. If the Precinct Ballot Counter units are to be used to tabulate absentee ballots, it is recommended that strict ballot accounting measures be observed and the ballots are run in small, carefully controlled, batches. One other anomaly was when a ballot became jammed when it was fed into the machine. When the cover was opened to remove the ballot, the machine immediately ejected it. It is not clear why the ballot became jammed in the first place, or why the machine ejected it when the cover plate was opened. This anomaly was not able to be explained or replicated. If this had occurred during an actual election, it would have required the poll workers to use the emergency ballot bin until technical assistance could arrive and remove the ballot.

During the course of this test, the ADA machine was also examined. A number of user options were tested during this phase, including reviewing the ballot, selecting and then changing a vote in a race, selecting and editing a write-in candidate, navigating between races and candidates within the ballot and adjusting the volume on the machine. There were no anomalies observed during the course of this examination.